IT 340 - Introduction to Networking Technology
Course Syllabus

Instructor

Section 001 and Section 005

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Office Hours:

- Monday
- 8:30 am - 4:30 pm (remote only)
- Tuesday & Thursday: 10 - 11:30 am, 3 - 5 pm

**Office Hours subject to change (typically with advance notice)*

Please put IT 340 and the course section in the subject of your email. This will ensure I respond more quickly to your email.

Text: CompTIA Linux+ Study Guide: Exam XK0-006 (Sybex Study Guide), 6th edition, Richard Blum, Sybex, 2025, ISBN: 978-1394316328

Note: This is excellent quiz and exam studying material, and it can help accelerate your Linux training. But it is not mandatory. Lectures will cover most of the material found in the book.

Tutoring: See Canvas for ACM and YWCC mentoring programs by visiting https://computing.njit.edu/tutoring.

Canvas: Additional material and resources is found on the Canvas class website, (https://canvas.njit.edu). It will be updated as the course progresses and contains the most recent information.

Schedule

Section 001:

- Tuesdays and Thursdays
- 11:30am - 1:00pm
- WEST LECT 2 (College of Architecture)

Section 005:

- Wednesdays and Fridays
- 10:00am - 11:30am
- CKB 313

Course Description: IT 340 - Intro to System Administration will introduce the tasks and techniques required to perform as a system administrator of modern operating systems. Topics to be covered include: booting, process control, the file system, managing users and resources, backups, configuration management, networking, the network file system, email servers, security, hardware devices, interoperability and daemons. Whenever possible, lectures will be augmented with hands-on exercises.

Prerequisites: IT 120 - Networking knowledge is essential to this course, as many commands will be used to manage multiple Virtual Machines (VMs) connected via a Virtual LAN. This course and the project will assume you know the basics of how networks function.

Note: Prior coding knowledge is beneficial, but not required. AI knowledge is encouraged!

Course Requirements

To complete the labs and project for this course, you must have access to, and administrative rights on, a computer that meets the NJIT minimum baseline computer system standards. You can find a listing of the minimum computing requirements under 'Ying Wu College of Computing' at https://ist.njit.edu/student-computers-recommended-specs.

We will be using VMWare Fusion and/or VirtualBox to create and administer virtual instances of Ubuntu (Linux) machines. We will go over setting up your PCs during our first lab session. Please note that students are responsible for the administration/maintenance of their own computer. This includes any software loaded onto it for this course. While I will provide help with problems when I have time available, responsibility for resolving problems remains with the student.

We will be using Git/Github to manage version control of all VM assets. This is to ensure VM instances can be updated with student created packages. We will also be using Trello, a free alternative to Jira/Atlassian Suite to track project progress. Students must use their NJIT email to create their accounts.

Calendar

Day	Reading/Quiz	Lecture	Lab
Week 1 **September 3, 5**	Read Part 1, Chapters 1 & 2	**Introduction** - Icebreaker - Intro to Sys Admin - Virtualization concepts	**Environment Setup** - Install VMWare Fusion - Create a VM - Install Git - Create Github Repo
Week 2 **September 10, 12**	**Quiz - Lecture 1**	**Command Line Basics** - What is Ubuntu - Basic cmd navigation - VM snapshots	**Virtual Machine Setup** - Install Ubuntu on VM - Create/ Manage VM snapshots - Basic cmd commands
Week 3 **September 17, 19**	Read Part I, Chapter 3	**File Systems** - File system hierarchy and navigation - File operations	**Virtual Machine Setup** - File System Navigation - Git navigation
Week 4 **September 24, 26**	**Quiz - Lectures 2 & 3** Read Part I, Chapter 4, Part IV, Chapter 15	**Permissions, Text Editors** - File permissions and ownership - Text editors (vi, vim, nano) - Intro to Scripting	**Permissions, Scripting** - Permission management - Basic shell scripting - Git and Github exercises
Week 5 **October 1**	Read Part III, Chapter 11	**Packages, Monitoring** - Packaging (YUM, apt-get) - Basic Monitoring (netstat)	**No class (Mental Wellness Day)**
Week 6 **October 8, 10**	**Quiz - Lectures 4 & 5** Read Part III, Chapter 10 Part IV, Chapter 16	**User Accounts** - Users, Group, Other - Sudo	**Managing Users** - Setup Multiple Users - Snapshot checkpoints - Manage User Environments

Week 7 **October 15, 17**	Read Part III, Chapter 13 Part IV, Chapter 17	**Process Management** - Processes - Jobs - Monitoring (ps, top, systemctl)	***Midterm Review*** **Project Briefing** - Trello Setup - Groups (if desired)
Week 8 **October 20-24**	**Midterm Exam (Lectures 1 - 7)** *Makeup exam is available by appointment		
Week 9 **October 29, 31**	Read Part VI, Chapter 28 **Project Proposal Due**	**System Restore** - Advanced monitoring - Version Control - System Restore Points/Snapshots	**Managing Users** - Create scripts - Populate Git and Github Repositories - VM Snapshots
Week 10 **November 5, 7**	Read Part V, Chapter 20 Part V, Chapter 22	**Services** - Systemd - Service config - Troubleshooting - Backout and Contingency Plans	**Service Management** - Service config - Security policy - Backout plan **Project Milestone - Front End and Github repository**
Week 11 **November 12, 14**	**Quiz - Lectures 8 & 9** Read Part IV, Chapter 18 Part IV, Chapter 19	**Security** - Firewalls - SSH config - Key management	**Remote access setup** - Setup Firewall(s) - Set up Remote access - Log analysis exercises
Week 12 **November 19, 21**	Read Part II, Chapter 7	**Network Configuration** - DNS - DHCP - IP config	**IP Configuration** - Static IP config - Snapshot recovery - Monitoring **Project Milestone - Database and Login**
Week 13 **December 3, 5**	**Quiz - Lectures 10 & 11** Read Part V, Chapter 23 Part VII, Chapter 29	**VLANs and Networks** - LAN & VLAN - Network Monitoring - Ping, traceroute	**VLAN Setup** - Create a VLAN through VMs - Netstat, ss, ping, traceroute
Week 14 **December 10, 12**	Study!!	**Final Review**	**Project End - VLAN and full site functionality**
Week 15 **December 15- 20**	**Final Exam (Lectures 8 - 12)** *Makeup exams are **NOT** available*		

*Note: Schedule is subject to change. Refer to Canvas for the most recent information.

Grading Policy

Final grades will be based on:

Quizzes (5)	10%	A	*100% - 90%*
Labs	15%	B+	*85% - 89%*
Midterm	24%	B	*80% - 84%*
Final	27%	C+	*75% - 79%*
Project Milestones (3)	24%	C	*70% - 74%*
TOTAL	**100%**	F	*0% - 65%*

Grading Policy (cont.)

Quizzes are never curved. The Midterm and Final are subject to curving based on the following rules:

- Any questions that a majority of the class gets wrong will become extra-credit instead of applying to your score.
- I will always round up to the higher tier grade based on your grade decimal percentage. (Ex. An 89.5%, will be rounded up to an A instead of a B+)

I will not assign incompletes unless there are extraordinary circumstances.

Project

Students will create a simulated full-stack environment via creating 4 VM instances all connected via VLAN. This will be a local IaaS environment that will be administered by the students.

Students will create a Project Proposal that illustrates the following:

- Name of the Project
- What type of website/service will be created
- The purpose of this website/service
- An image/drawing of a login page.

Based on their project proposal, deliverables will be given for students to complete over the course of 7 weeks. In addition to completing these deliverables, students must meet general project milestones and track their progress via Trello. Grades will be based on Milestone Completion, Trello board organization, and the ability to explain/present your project upon being asked.

Project Milestones will be explained later in the semester. AI usage is encouraged! Students are encouraged to use AI to generate front-end webpages and databases, in addition to assisting with their proposal.

Participation (Attendance)

Unlike most courses, attendance will not be taken. I will note if you are present, but your attendance does not affect your grade. Life happens, and we all learn in different ways. It is up to your discretion whether you come to lectures or not. I **strongly encourage** you to attend lectures and/or office hours, but they are not mandatory. Labs can be completed via Canvas and on your own PCs; labs offer on-campus resources that can be linked to your PC for the purpose of portability.

All quizzes will be **in-person and on paper**. If you miss one, you may ask for a make-up quiz during office hours up to two weeks after the initial quiz. Make-exams can be scheduled during my Office hours, and can be scheduled outside of office hours upon request.

Final Exam Attendance is MANDATORY, no exceptions. There will be no make-up exams

for the final.

The Golden Rule: I will work with you if you work with me. We're all professionals here. :)

Academic Integrity Policy

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:
http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf**.**

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at* dos@njit.edu"

All your assignments must constitute original work. These assignments may **NOT** be done in collaboration with anyone else (unless otherwise approved). No credit will be given for any assignment that is copied—in part or in its entirety—from another person. **Both people involved will receive no credit.**

Note, however, that you may "talk" about assignments with each other, but such discussions must remain at a conceptual level. In summary, keep in mind:

Do NOT ask to see another person's assignment, particularly a finished assignment.

Do NOT pass your assignment around to other members of the class.

Do NOT submit duplicate assignments. Even partially duplicate assignments will NOT be accepted.
If the instructor is at all **uncomfortable about the originality of your work**, no credit will be given.
Do NOT submit an assignment used for previous assignments in this or other courses.

TURNITIN Policy

NJIT uses Turnitin.com, a service that helps prevent plagiarism on student papers. I will be using the Turnitin.com service at my discretion to determine the originality of student work. If I submit your work to Turnitin.com, it will be stored by Turnitin.com in their database as long as their service remains in existence. If you object to this storage, **you must let me know no later than two weeks after the start of this semester.** Note, I may utilize other services and techniques to check for plagiarism and inappropriate AI usage.

AI Usage Policy (Standard):

Policies for the usage of AI language models tools, such as ChatGPT, to generate new content are as follows:

- You must use AI-assisted tools for learning responsibly alongside your critical thinking and writing skills
- To generate content as a starting point to inform **your** work, brainstorm ideas, and prepare notes for **your** writings just as you do with your textbooks, library resources, and web materials.
- AI-generated text in submitted assignments must use quotation marks and be appropriately cited.
- Make sure the information provided is factual
- Such tools **must not write a significant portion** of your essays or assignments. This behavior is considered cheating.

Student Absences for Religious Observations

NJIT is committed to supporting students observing religious holidays. Students must notify their instructors in writing of any conflicts between course requirements and religious observances, ideally by the end of the second week of classes and no later than two weeks before the anticipated absence. All instructors must include a reminder on the course syllabus about this notification process.

All instructors are required to provide academically reasonable accommodations, allowing students to complete missed assignments, exams, quizzes, or other coursework within the term. Instructors are encouraged to consider the NJIT religious holiday calendar and exercise cultural sensitivity when scheduling assessments or major assignments. You may find the NJIT religious holiday calendar at https://www.njit.edu/inclusive/religious-and-spirituality-resources.

All instructors must ensure that students are not penalized for properly documented absences and maintain confidentiality regarding religious observances. For questions or additional guidance, please review the NJIT religious observances policy at https://www.njit.edu/registrar/njit-policy-student-absences-religious-observances or contact the Office of Inclusive Excellence at inclusiveexcellence@njit.edu.